MULTIMEDIA **UNIVERSITY**

MULTIMEDIA UNIVERSITY
FINAL EXAMINATION

TRIMESTER 2, 2016/2017

TSE2451/TSR2701 – SOFTWARE REQUIREMENTS ENGINEERING
(All sections / Groups)

9 MARCH 2017
09.00 a.m. – 11.00 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of 9 pages with 4 Sections only.

2. Attempt **ALL** questions in **SECTION A, SECTION B, SECTION C and SECTION D**. The distribution of the marks for each question is given.

3. Please write all your answers in the answer box associated with each question in this question paper.

Fill in each blank with ONE word that best fits the meaning of the sentence as a whole.

(10 marks)

Answer

The goal of requirements engineering is to (1)___ customer requirements as completely as possible in good quality. The four main activities of requirements engineering include (2)___, documentation, validation and (3)___ and management. To perform these activities, the requirements engineer must possess (4)___ and process knowledge together with a multitude of soft skills. For example, the requirement engineer must have (5)___ thinking skill in order to explore unknown domains, understand and analyze complicated problems and relationships. In order to specify the requirements of a system correctly and completely, it is essential to identify the relationships between individual materials and (6)___ aspects as precisely as possible. Hence, the part of reality that is relevant for the requirements of a system is called the system (7)___. Aside from documents and legacy systems, (8)___ are the main sources for requirements. During a/an (9)___, the requirements

1)

2)

3)

4)

5)

6)

7)

8)

9)

engineer asks predetermined questions to one or

more stakeholders and documents the answers. Most

often, during (10)___, creative ideas could be

collected within a short time frame from a group of

five to ten people.

10) [   ]

Section B

Read Scenario 1 and identify the choice that best completes the statement or answers the question.

Scenario 1: Your company assigned you a project to classify product features based on the Kano classification. The target product is a tablet that shall be introduced in 2017.

PF1: The tablet shall be able to roll up like a newspaper.
PF2: The tablet shall be able to connect to WIFI.
PF3: The tablet shall be able to run Windows 10.
PF4: The tablet shall include onscreen keyboard to enable user to type.
PF5: The tablet shall include an internal storage capacity of minimum 256GB.
PF6: The tablet shall be able to use a self-powered tactile sensor that harvests energy when a user presses the touchscreen.

(5 marks)
Answer

1) Which of the following requirement does not generate a positive disposition when being fulfilled, but merely helps to avoid massive discontent?
    A. PF1.
    B. PF2.
    C. PF3.
    D. All of the above.

[   ]

2) Which of the following technique is suitable for eliciting requirement such as PF5?
    A. Observation.
    B. Survey.
    C. Creativity.
    D. Document centric.

[   ]

3) Which of the following requirements are considered as explicitly [   ] demanded product features?
   A. PF1 and PF6.
   B. PF2 and PF4.
   C. PF3 and PF5.
   D. All of the above.

4) Which of the following requirement turns from delighter into [   ] satisfier as time goes by?
   A. PF6.
   B. PF5.
   C. PF4.
   D. All of the above.

5) Which of the following technique is suitable for eliciting [   ] unconscious requirement such as PF1?
   A. Document centric.
   B. Survey.
   C. Observation.
   D. Creativity.

Read Scenario 2 and identify the choice that best completes the statement or answers the question.

Scenario 2: An initial set of requirements for smart home security system has been specified in natural language. Below you will find an excerpt from the requirements specification.

R1: If a sensor detects that a glass pane is damaged or broken, the smart home security system shall inform the security company.

R2: The smart home security system shall be available 24 hours per day, 360 days per year.

R3: The smart home security system shall be developed using the Rational Unified Process.

R4: The smart home security system shall send the message to the user.

R5: The smart home security system shall provide the house owner with the ability to change his/her personal identification number.

R6: After the PIN has been entered correctly, the smart home security system shall record the granted access into HCBS system.

(5 marks)

Answer

6)   Identify the requirement type for R1.
        A. Functional requirement.
        B. Quality requirement.
        C. Constraint.
        D. Non-functional requirement.

7)   Which of the following is a quality requirement?
        A. R1.
        B. R2.
        C. R3.
        D. All of the above.

8)   Identify the cause of error for R4.
        A. Nominalization.
        B. Universal quantifiers.
        C. Noun without reference index.
        D. Incompletely specified conditions.

9)   Identify the system activity type for R5.
        A. Autonomous system activity.
        B. Interface requirement.
        C. Activity diagram.
        D. User interaction.

10)   Which of the following requirement contains term(s) that must be defined in a glossary?
        A. R4.
        B. R5.
        C. R6.
        D. All of the above.

Read Scenario 3 and identify the choice that best completes the statement or answers the question.

Scenario 3: Your colleague used an analytical prioritization approach to prioritize the following five requirements. Table 1 shows the rank for each requirement.

Table 1: Calculation of priorities in a prioritization matrix

Relative weight	Benefit= 2	Penalty= 1			Cost= 1		Risk= 0.5			
Require-ment	Relative Benefit	Relative detriment	Total	Value%	Relative Cost	Cost %	Relative Risk	Risk %	Priority	Rank
Req-11	5	3	13	16.8	2	13.3	1	9.1	0.941	1
Req-12	9	7	25	32.5	5	33.3	3	27.2	0.692	3
Req-13	5	7	17	22.1	3	20.0	2	18.2	0.759	2
Req-14	2	1	5	6.5	1	6.7	1	9.1	0.577	5
Req-15	4	9	17	22.1	4	26.7	4	36.4	0.589	4
Total	25	27	77	100	15	100	11	100		

(5 marks)
Answer

11) Identify the creator for this analytical prioritization approach.
    A. Karl E. Wiegers.
    B. Noriaki Kano.
    C. Thomas L. Saaty.
    D. Yoji Akao.

12) Which of the following requirements are ranked incorrectly?
    A. Req-11 and Req-13.
    B. Req-12 and Req-13.
    C. Req-12 and Req-15.
    D. Req-14 and Req-15.

13) Identify the location of the mistake made.
    A. One of the values in Risk% column.
    B. One of the values in Priority column.
    C. One of the values in Cost% column.
    D. One of the values in Relative Detriment column.

14) Which of the following is the correct rank order after amending the error?
    A. Req-13, Req-11, Req-12, Req-15, Req-14.
    B. Req-11, Req-12, Req-13, Req-15, Req-14.
    C. Req-11, Req-13, Req-15, Req-12, Req-14.
    D. Req-11, Req-13, Req-12, Req-14, Req-15.

Continued...

15) The following are basic properties of requirements management tool EXCEPT
    A. Allow for different views on the managed information depending on the purpose.
    B. Generate reports or summaries regarding the managed information.
    C. Use a single identification for every managed information.
    D. Manage logical relationships between information.

Section C

1) Provide TWO conflict resolution techniques.

(2 marks)

Answer

2) Explain what is meant by
   - Pre-Requirements Traceability,
   - Post-Requirements Traceability, and
   - Traceability between Requirements?

(3 marks)

Answer

3) Name the FOUR target groups that require software requirements to be documented and provide reasons (one reason for each group) why they require documented requirements.

(4 marks)

Answer

4) What are the FOUR type of defects that could be found during requirements validation? For each type of defect, determine the remedy or corrective action for it.

(4 marks)

Answer

5) As a requirements engineer to introduce a requirements management tool for a company, you first have to consider several aspects such as whether there are adequate resources or trained employees in the company to use the tool. Provide TWO other aspects you need to consider before introducing the requirements management tool.
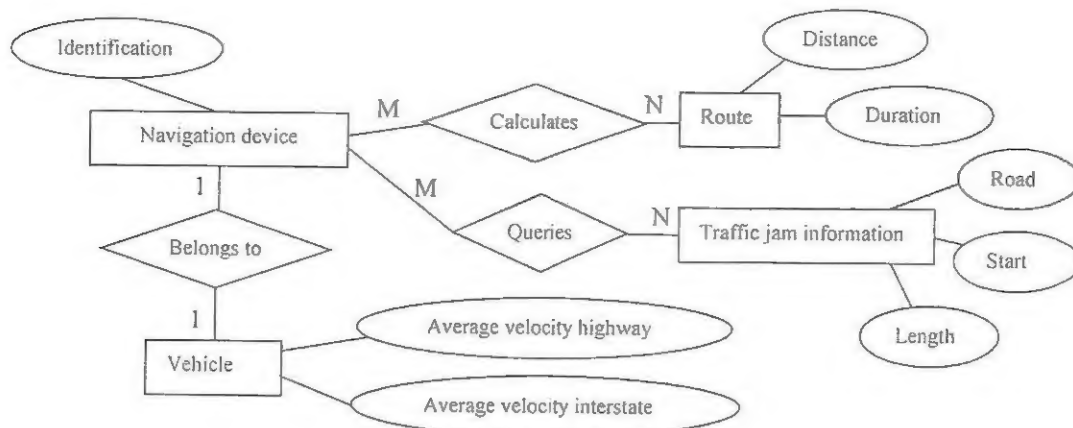
(2 marks)

Answer

Section D

1. The Cyberjaya University is planning the introduction of a new web library system (WLS) that supports lecturers and students. The new system enables the students and lecturers to search books in WLS and the Association for Computing Machinery (ACM) catalogue system. The search feature is implemented in the WLS directly. Every time a student is using the search feature, it analyzes the books in WLS and accesses the ACM catalogue system for the search term. Therefore, the results of the search are books of the WLS and a list of ebooks that can be found in the ACM catalogue system. Draw a use case diagram from the brief functional description.

(5 marks)

Answer

Figure 1: Model X

2. List out all the attributes of vehicle in Model X.

(1 mark)

Answer

3. List out all the entity types in Model X.

(2 marks)

Answer

4. Explain the cardinalities of the entity types with regard to the relation type "queries" in Model X.

(2 marks)

Answer

End of Page